





HELIX

Hellenic
Data
Service



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IMSI/Athena RC

Motivation

Converging Policy landscape

- Data Economy – a strategic priority for EU's sustainable future growth integrating policy, technology, and innovation actions
- Public Sector Information – open up and create value from public-sector and publicly-funded Data (open data, INSPIRE, H2020, OGP, ...)
- Industrial Data Platforms – emerging organization & technical instrument to facilitate data sharing and valorization within EU industrial value chains
- Research
 - Open Access – de jure policy for sharing EU-funded scientific output
 - Data Management Plans – formalize data handling on project/organization-level
 - FAIR data – de facto international policy for scientific data

Motivation

The Big Picture

Economic growth, scientific progress, and societal prosperity are about searching, sharing, using, experimenting, building, and valorizing

(*frictionless)

Data

* = simple, fast, inclusive,



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Hellenic Data Service

- **Scientific eInfrastructure for data-intensive research**
 - Supports the full lifecycle of scientific data management, processing, sharing, and reuse
 - Inherently scalable, cloud-based
 - Nation-wide, horizontal, cross-domain
 - Low-cost, economies of scale, network effects, maximize ROI
 - Multiple roles: Open Access, FAIR Data, Public Data, Industrial Data Platform

Data first

HELIX

The 3 pillars of HELIX

- **Publications**
 - Nation-wide, cross-domain discovery of publications
 - Adapt and localize OA OpenAIRE CRIS services
- **Data**
 - Data catalogue and repository for **FAIR** scientific and **industrial** data
 - Discover, collect, evaluate, download, and use
- **Labs**
 - Generic-purpose and domain-specific services and APIs for data analysis, processing, and experimentation

Data alone is
not enough

Target groups

- Scientists: data sharing, OA publishing, data experimentation
 - All scientific fields, including **citizen scientists**
- Organizations: institution-wide services augmenting, exposing, or replacing existing publication & data catalogues/repositories
 - Academia, Research, Public Administrations (PSI), special-interest groups
- Scientific Infrastructures: building block; scalable data processing services for very large, heterogeneous scientific data
 - Upcoming: ELIXIR (bio), APOLLONIS (linguistic)
- Industry & innovators: value-added services; ad hoc analysis services
 - Industrial Data Platform: low-cost data processing infrastructures; Data Science as a Service, training data for ML

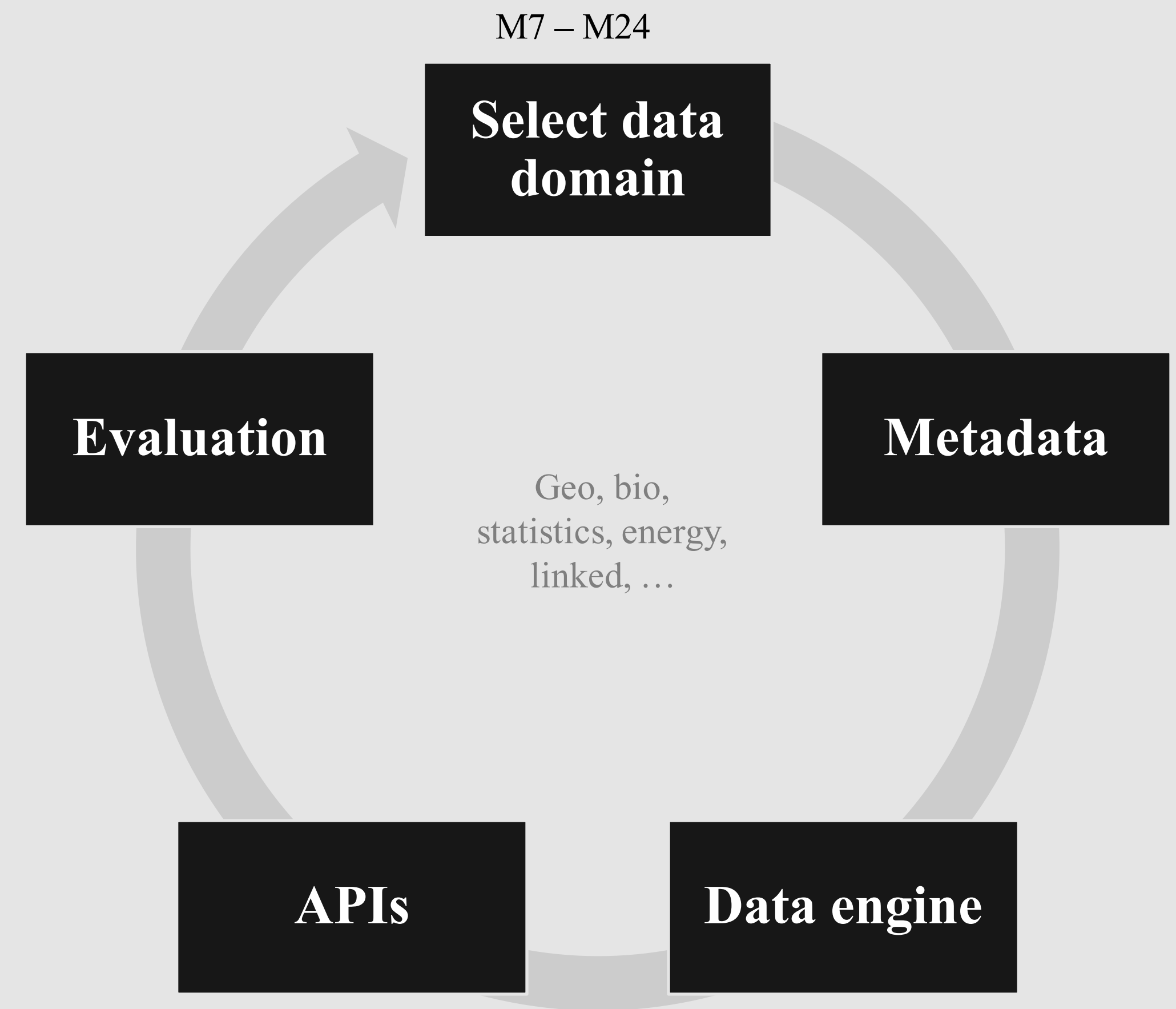
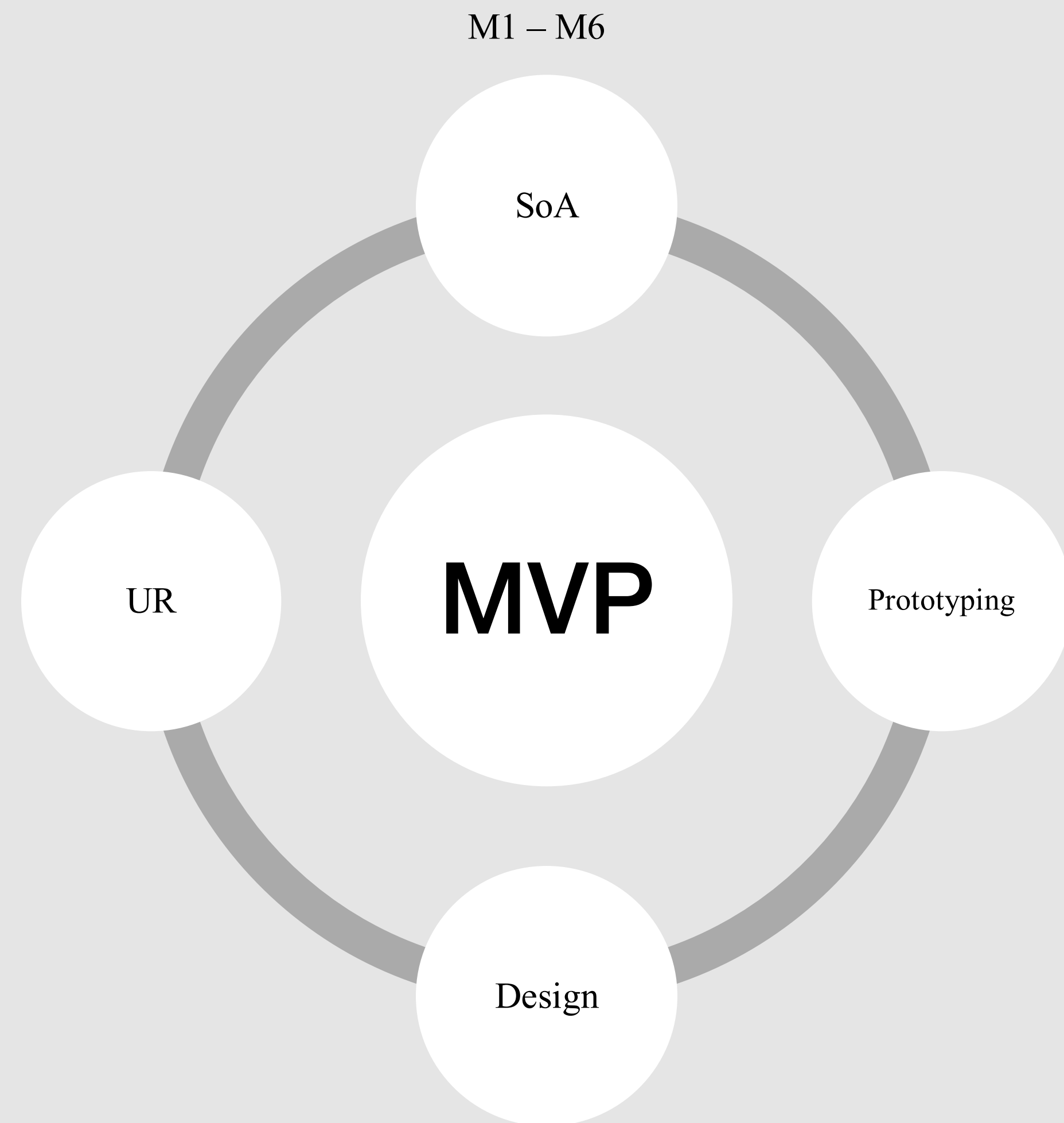
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Development Roadmap

- **Phase 0 (incubation): 2012-2017**
 - Original concept & funding proposal; core technology developed in other R&D projects; National Research Infrastructures Roadmap
- **Phase 1 (MVP): 2018-2019**
 - MVP for technical/policy foundations; core services & lighthouse apps/communities; prepare follow-up
- **Phase 2 (Beta): 2020-2024**
 - Scale services and expand reach to more scientific communities; integration in 3rd infrastructures; first industrial clients; governance structure; industrial data platform
- **Phase 3 (Production): 2025-**
 - Sustainable diachronic operation

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Data-driven agile development



HELIX Architecture

HELIX Architecture

Three pillars

hellenicdataservice.gr || helix.gov.gr



pubs.hellenicdataservice.gr



data.hellenicdataservice.gr



lab.hellenicdataservice.gr

Publications

- Search for Publications
 - Harvested from EU-wide institutional, thematic, or ad-hoc repositories
 - Provide publications published from Greek S&T organizations
 - OAI-PMH v2.0, OAI-DC
- Value added services (under development/testing)
 - Infer data from publications (link data with pubs)
 - Analytics & KPIs
- OA Training & support



Data

- CKAN-based Data Catalogue & Repository extended via multiple plugins
 - Core **CKAN v2.8** (started from v2.2, soon will port to v3.0)
 - Plugins: **CKAN + PublicaMundi** (metadata, geo) + **HELIX** (metadata/workflow)
 - Custom roles/profiles/organization structure
- Core CKAN services & HELIX-specific services
 - Search, view, visualize, download
- Data management
 - Dataset upload (files) **open** to all publishers (size-limited, admin QA & sanitization)
 - Multiple **replication** policies for harvested datasets
 - Automated **independent** and **asynchronous** data **ingestion** policies (files to data)

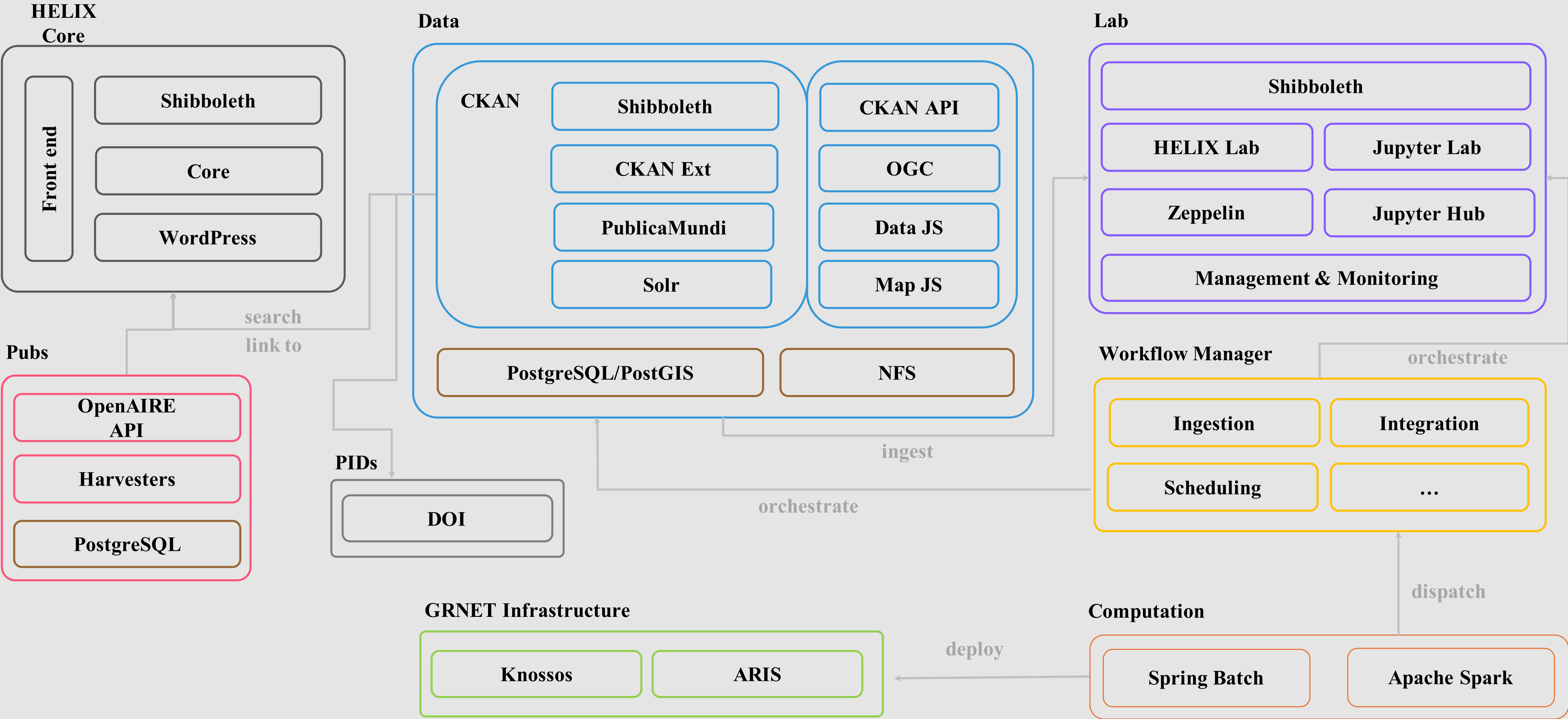


Lab

- Open-ended collection of independent services and applications for experimenting and using data
 - No interdependencies or single point of failure
 - Fast and simple to replace/extend services in operation
 - Service portfolio constantly expanding, with varying TRL/access levels
 - Replicate/expand the industry emerging paradigms (e.g., Azure, Google)
- All have automated & configurable access to the repository's data
 - Data available as files or databases/data processing frameworks
 - Flexible data availability policies per type/data set (e.g., depending on size, popularity, importance, domain, resource-utilization)



Logical Architecture



GRNET Infrastructure

Overview

- **HELIX developed, tested, and deployed on top of GRNET's infrastructure**
 - **Okeanos-knossos** (IaaS): Computing resources allocated to HELIX and assembled to VMs/VM groups according to needs
 - Upcoming:
 - **DELOS** (AAI): authenticate academic users; HELIX-specific per service/role authorization
 - **ARIS** (HPC): PoC for Jupyter HPC/GPU kernels; evaluate HPC-focused workflow management systems
- **Internal Service deployment, orchestration, monitoring and management**
 - IaaS-agnostic, built-to-scale, loosely coupled
 - **Production** requirements **unknown** (Phase 3); PoC/beta serves to **scale** in the **future**
 - **Standard** (e.g., data catalogue) vs. **Resource-intensive** (Jupyter Lab/Hub, Spark, HPC)

IaaS Utilization

- **IaaS resources organized in VM groups/clusters**
 - DRDB assembled in LVM and allocated to VMs; VPNs for intra-VM communication
 - Setup individual VM and VM groups per service/role/scaling requirements (Ansible)
 - Dockerized components & services
- **Orchestration/Workflow management**
 - Spring Batch-based (ingestion, publishing flows, housekeeping)
 - Upcoming: scientific/HPC workflows (AirFlow, Aiida)
- **Monitoring**
 - RRD: system-level (CPU, mem, traffic) & docker-level (resource use/container)
 - Alerts & Reports (typical workloads, scaling issues)

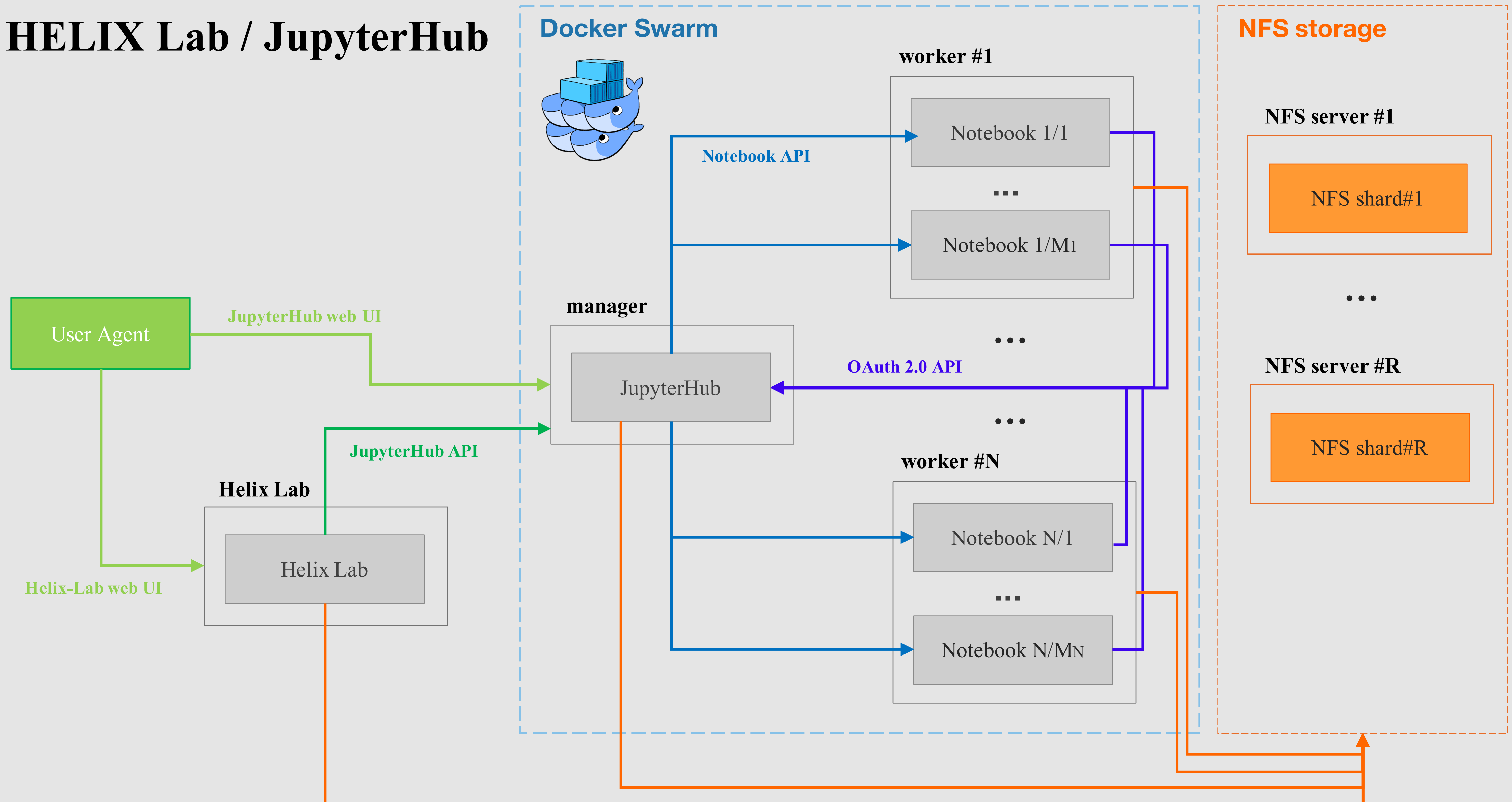
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JupyterHub

- **Single Jupyter Hub per kernel type** (load balancing, management, QoS)
 - Kernel types: **Stable** (base, scientific, data science) & **Experimental** (Deep Learning, Big Data)
 - Resources per Kernel type: from 2 vcores/4GB up to 32vcores/32GB
 - Users categories: **Standard** (majority), **Beta** (resource intensive), **Academic** (courses)
 - Tap into simple ML libraries, HPC/GPU, Apache Spark
- **HELIX-specific extensions**
 - User, User Group, and Kernel management
 - Virtual user file system linked to data catalogue

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HELIX Lab / JupyterHub



Thank you



DATA ✓

PUBS ✕

LAB ✓

ADVANCED SEARCH

Latest news



24 Apr 2018

Helix data principles: how well known or understood are they?

Explore the issues around health data. Learning activities specifically for people working with medi... [Read more](#)



24 Apr 2018

Helix, Nectar and RDS partnership

Aligning research infrastructure
Helix is partnering with Nectar and RDS to deliver transformation in the research sector. [Read more](#)

About Helix

Research for Data

Find, access, and reuse data from Australian research organisations, agencies and institutions via Helix flagship service.

Find research data

Our partners

Helix collaborates with universities and other research institutions to enhance the value of data and enable new discoveries.

Who we work with

The project

Helix-Nectar-RDS News is a great source of news, events and data jobs - sent direct to your inbox every fortnight. Sign up now to get the next edition.

Don't miss out!

Deliverables

Helix-Nectar-RDS News is a great source of news, events and data jobs - sent direct to your inbox every fortnight. Sign up now to get the next edition.

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Water quality



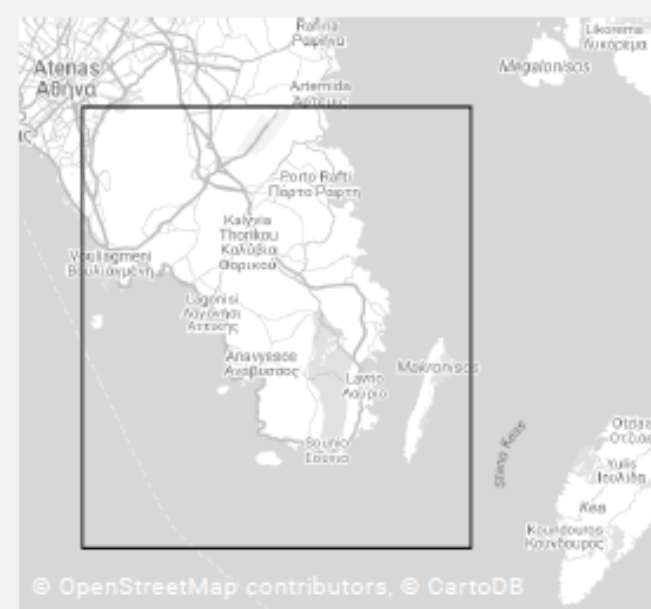
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CURRENT SEARCH FIELDS

- ✕ air
- ✕ quality

Σύνθετη αναζήτηση

LOCATION



ORGANIZATIONS

- ☐ Axios
- ☐ Decentralized Sciences
- ☐ Management Agency
- ☐ Municipality of Athens

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TOPICS

- ☐ Planning
- ☐ Frotier

RESULTS \\\ ALL \\\ AIR QUALITY

1 2 3 ≥ >>

Βρέθηκαν 145 σύνολα δεδομένων

Ταξινόμηση κατά

Σχετικότητα

Πριν 8 ημέρες @ ΕΠΙΧΕΙΡΗΣΕΙΣ

Places of Ancient Monuments DATA

ΓΕΝΙΚΗ ΓΡΑΜΜΑΤΕΙΑ

BIO PUBLIC OPEN SHAPEFILE WMS WFS

Πριν 8 ημέρες @ ΕΠΙΧΕΙΡΗΣΕΙΣ

A Brief History Of Time PUBS

ΓΕΝΙΚΗ ΓΡΑΜΜΑΤΕΙΑ

PHY OPEN PDF MOBI EPUB



Πριν 8 ημέρες @ ΕΠΙΧΕΙΡΗΣΕΙΣ

Λοιποί τόποι περιβαλλοντικού ενδιαφέροντος LAB

ΓΕΝΙΚΗ ΓΡΑΜΜΑΤΕΙΑ

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Θέσεις Αρχαίων Μνημείων LAB

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Πριν 8 ημέρες @ ΕΠΙΧΕΙΡΗΣΕΙΣ

NATURA 2000 και προστατευόμενες περιοχές DATA

ΓΕΝΙΚΗ ΓΡΑΜΜΑΤΕΙΑ

GEO PUBLIC OPEN SHAPEFILE WMS WFS

Water quality

Συνθετή αναζήτηση



Featured Publications

Πριν 8 ημέρες @ ΕΠΙΧΕΙΡΗΣΕΙΣ

Places of Ancient Monuments

ΓΕΝΙΚΗ ΓΡΑΜΜΑΤΕΙΑ

SHAPEFILE WMS WFS

Πριν 8 ημέρες @ ΕΠΙΧΕΙΡΗΣΕΙΣ

A Brief History Of Time

ΓΕΝΙΚΗ ΓΡΑΜΜΑΤΕΙΑ

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Λοιποί τόποι περιβαλλοντικού ενδιαφέροντος

ΓΕΝΙΚΗ ΓΡΑΜΜΑΤΕΙΑ

SHAPEFILE WMS WFS

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Search by theme



Humanities and Social Sciences



Business, Economics and Law



Agricultural and Veterinary Sciences



Environmental Sciences



Engineering, Computing and Technology



Biological Sciences



Medical and Health



Physical, Chemical and Mathematical Sciences

Explore



Themed Collections

Explore selected resources by theme



Services and Tools

Access data-related services and tools



Open Data

Find open data that is reusable



Grants and Projects

Search for research grants and projects

Institution



International Institutionfor
Applied System Analysis

Topics

URBAN PLANNING

BEACHES

Tags

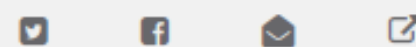
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ΓΕΩΔΕΔΟΜΕΝΑ

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RESULTS \\\ PUBS \\\ AIR QUALITY \\\ AIR QUALITY AND GREENHOUSE GASES (AIR)

Air quality and greenhouse gases (AIR)



Amann, M. (2017)

Cited By 2081

PUBLICATION: 20 - 10 - 2010
LAST REVISION: 14 - 09 - 2013
LANGUAGE: GREEK
TYPE: CONFERENCE OBJECT

PUBLICATION

TOPICS

ACTIVITY STREAM

Το σύνολο γεωχωρικών δεδομένων απεικονίζει μικρούς νησιωτικούς υγροτόπους έκτασης μικρότερης των 80 στρεμμάτων, όπως εγκρίθηκαν από τον Υπουργό Περιβάλλοντος Ενέργειας και Κλιματικής Αλλαγής, με την εξουσιοδότηση του νόμου για τη Διατήρηση της Βιοποικιλότητας (ν.3937/2011) και μετά από επαρκή επιστημονική τεκμηρίωση. Το σχέδιο Προεδρικού Διατάγματος για την προστασία των μικρών νησιωτικών υγροτόπων με τον τίτλο: «Έγκριση καταλόγου μικρών νησιωτικών υγροτόπων και καθορισμός όρων και περιορισμών για την προστασία και ανάδειξη των μικρών παράκτιων υγροτόπων που περιλαμβάνονται σε αυτόν» υπεγράφη από τον Υπουργό την 1η Φεβρουαρίου και προωθήθηκε στο Συμβούλιο Επικρατείας για επεξεργασία.

[LINK TO PROJECT](#)

[LINK TO RESEACH DATA](#)

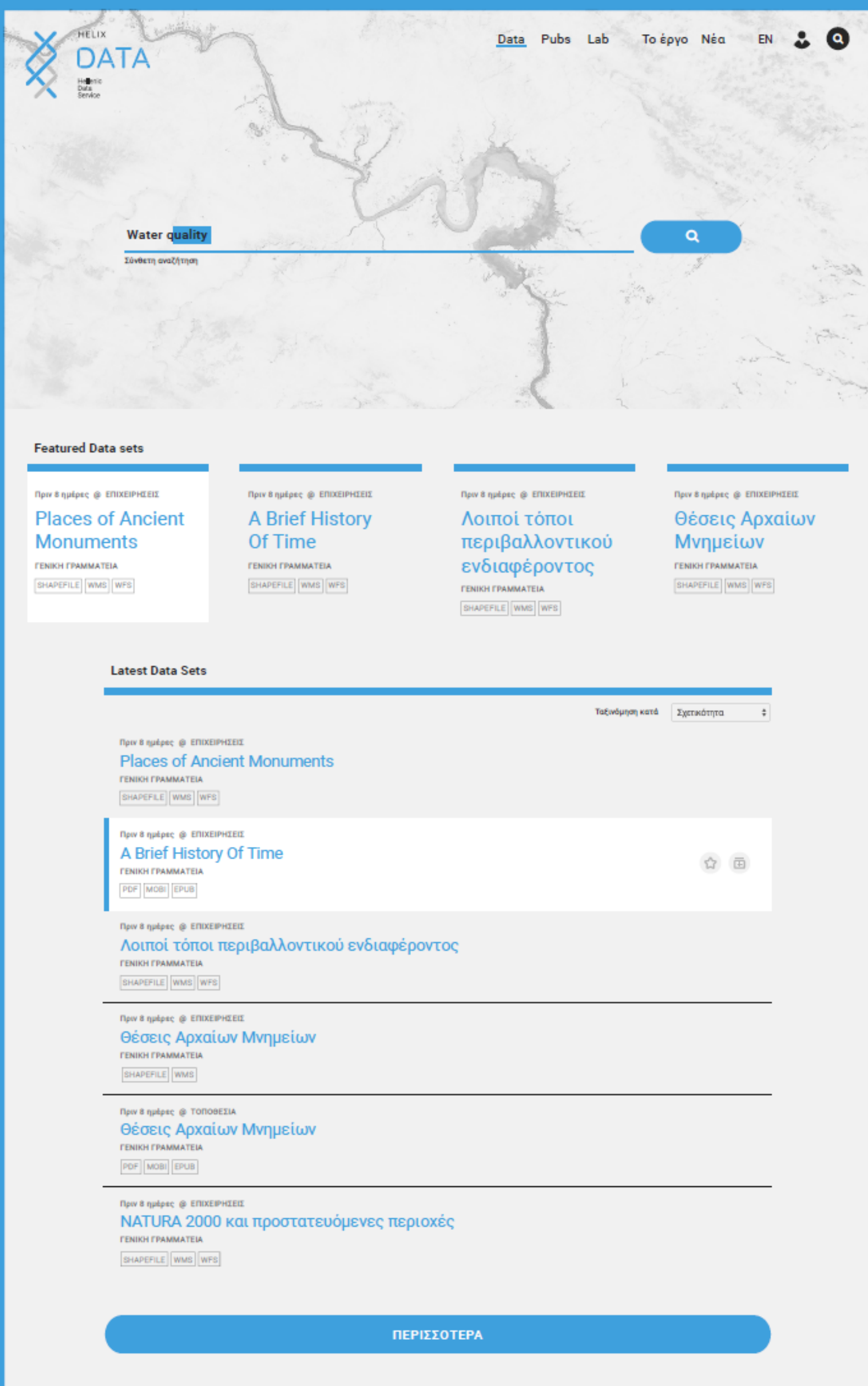
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CITE THIS ARTICLE

BibTeX

Amann, M. "Air Quality and Greenhouse Gases (AIR)," January 27, 2017.



Institution



Ministry of Environment,
Energy and Climate
Change

Topics

URBAN PLANNING

BEACHES

Tags

ΥΓΡΟΤΟΠΟΙ ΝΗΣΙΑ

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RESULTS \\\ DATA \\\ AIR QUALITY \\\ AIR QUALITY IN ATTIKI URBAN AREA

Air Quality In Attiki Urban Area



PUBLICATION: 20 - 10 - 2010
LAST REVISION: 14 - 09 - 2013

DATA

TOPICS

ACTIVITY STREAM

DEVELOPERS

Το σύνολο γεωχωρικών δεδομένων απεικονίζει μικρούς νησιωτικούς υγροτόπους έκτασης μικρότερης των 80 στρεμμάτων, όπως εγκρίθηκαν από τον Υπουργό Περιβάλλοντος Ενέργειας και Κλιματικής Αλλαγής, με την εξουσιοδότηση του νόμου για τη Διατήρηση της Βιοποικιλότητας (ν.3937/2011) και μετά από επαρκή επιστημονική τεκμηρίωση. Το σχέδιο Προεδρικού Διατάγματος για την προστασία των μικρών νησιωτικών υγροτόπων με τον τίτλο: «Έγκριση καταλόγου μικρών νησιωτικών υγροτόπων και καθορισμός όρων και περιορισμών για την προστασία και ανάδειξη των μικρών παράκτιων υγροτόπων που περιλαμβάνονται σε αυτόν» υπεγράφη από τον Υπουργό την 1η Φεβρουαρίου και προωθήθηκε στο Συμβούλιο Επικρατείας για επεξεργασία.

DATA AND RESOURCES



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METADATA

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ΕΠΙΚΟΙΝΩΝΙΑ	ΟΡΓΑΝΙΣΜΟΣ	Υπουργείο Περιβάλλοντος Ενέργειας και Κλιματικής Αλλαγής
	EMAIL	info@geodata.gov.gr
ΑΠΟΣΠΑΣΜΑ	Κάλυψη γης για την Ελλάδα και το έτος 2000, σύμφωνα με τα παραδοτέα του προγράμματος CORINE της Ευρωπαϊκής Ένωσης	
ΓΛΩΣΣΕΣ ΠΟΡΩΝ	gre, eng	
CONFORMITY	TITLE	Title text
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